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reasoning proceeds upon the assumption that belief in a metaphysical postulate, and belief in God, and belief in the existence of the man in the next room, are on the same psychological plane. Plato believed in God because he was a Greek of conservative and religious feeling and abhorred the atheistic temper of the Sophistic 'enlightenment.' This was a far more intuitive and primary belief than his belief in the hypostatic reality of the idea of good. This latter he would always have affirmed, if challenged, because it was the inevitable outcome both of an epistemological theory that demanded the hypostasis of all general notions, and of a social doctrine that postulated in the rulers of mankind the conscious possession of a unity of purpose dependent on a consistent and completely reasoned ideal of good. To say, then, that because both are in our metaphysical terminology supreme transcendental entities, therefore the idea of good *is* God, is merely to cheat ourselves with words and substitute for the apprehension of Plato's meanings a juggling with his symbols.

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The Science and Philosophy of the Organism. By HANS DRIESCH. London, A. and C. Black, 1908. — pp. xiii, 324.

This volume consists of the Gifford Lectures of 1907; but, since it is to be followed by a second volume containing the lectures of this last summer, it offers only an incomplete development of the author's position. For this reason, and because of disconnected presentation, of frequent repetition, and of hesitating argumentation, the volume is somewhat unsatisfactory. However, it contains much that is of value by way of summarizing recent work, and much that is suggestive by way of criticism.

Professor Driesch is certainly nothing if not persistent; his position, as developed in a number of writings, was presented and discussed in this REVIEW two years ago,[1] and in these lectures the same main purpose is again found to be actuating him, namely, that of arguing for a vitalistic view of the organism and for the existence in it of an entity which is called "entelechy." Accordingly, so far as this general viewpoint is concerned, the criticisms of two years ago could only be repeated and again insisted upon as valid. Indeed in the present volume very little if any new evidence is presented; possibly something more conclusive will be offered in the second volume, but this is hardly to be expected.

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[1] "Driesch's Theory of Vitalism," by E. G. Spaulding, PHILOSOPHICAL REVIEW, Vol. XV, pp. 518 ff.

The two volumes, it is announced, will be divided into three "Sections," on "The Chief Results of Analytical Biology," "Die Seele als elementarer Naturfaktor," and "The Philosophy of the Organism," respectively. The first makes up the whole of the present volume, and is subdivided into two "Parts": I, on "The Individual Organism with Regard to Form and Metabolism," II, on "Systematics and History." Although issue must be taken with Professor Driesch's main position, recognition must be made of his paramount philosophical interests, of his lack of dogmatism, and of his wide yet accurate technical knowledge of subjects outside biology, characteristics found all too seldom among biologists in general.

In fact, Professor Driesch acknowledges having a definite philosophical position, although he does not make much use of it and is not always consistent with it. He is a Kantian, and yet biology is for him the highest of all sciences, since it embraces as its final object the action of man. His definition of life seems to make three characteristics essential, namely, specific form, metabolism, and movement; but it is the first of these that, in his opinion, occupies the very centre of biological interest at present. Accordingly, it is to the physiology of developing living forms, of morphogenesis, that he first directs his attention; from this he derives proof for an entelechy, etc. Thus in Part I, containing four subdivisions, after giving a very good outline of normal embryological processes, he discusses some of the recent important experimental results, including those in which he himself has been the pioneer. Emphasis is placed on the fact that each cell of the early division-stages of the sea-urchin (*Echinus*) will itself, if isolated from the others, produce a typically whole gastrula; or, if not so isolated, it will coöperate either with an abnormal or with the normal number of cells to give the same result.[1] Likewise, if the spatial relations of the cells are altered by pressure, normal organization still occurs. This is considered to be proof, both that the cells are each 'æquipotential,' and that evolution in the strict sense of the term, viz., as preformation, cannot be true; epigenesis in some form and to some extent must be admitted. On the other hand, it is well known that the ovum has a definite polarity and that certain eggs at least have distinct protoplasmic layers; in these it is possible to make a cut at different angles to the axis, so that, according as this cut is parallel or approaches right angles, whole or partial development occurs. Such experiments show a polar-bilateral structure, an organization in the egg. There must be preformation to some extent, as well as epigenesis, he concludes. The fact that such results are obtainable in quite a number of forms leads Professor Driesch to introduce some new concepts which stand, in his opinion, for real entities, and upon which much of his subsequent argument is based. Thus, the real fate of each embryonic element in a definite line of morphogenesis is called its "prospective value"; its *possible* fate is its "prospective potency." The potency contains more than the value; there are more morphogenetic possibilities contained in each embryonic part than are actually realized in any one development.

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[1] Such phenomena are found in the eggs of echinoderms, medusæ, nemertines, amphioxus, fishes, and some other forms.

To be distinguished from the potencies are the internal and external means of morphogenesis, such as secretion, surface tension, osmotic pressure, heat, etc. These processes do not constitute life, nor can their laws, although still holding in the organism, account for the specific, the individual element in every organism. Here Driesch implies that there is no problem of individuality in the inorganic realm, and on the basis of this assumption implies that the organism must differ from anything inorganic by the presence of a potency, an agency, an entelechy which will account for individuality, — all fallacious argumentation! The potency is made an agency; it "is the truly immanent cause of every specification affecting single organogenetic processes"; everything else, all external and internal circumstances, are simply "means" and conditions. But the potency is also a formative cause; it finds something upon which to act in those parts which contain the potencies for the next ontogenetic stage; there is a harmony between "formative cause and cause-recipient." With this we are brought to the central point of the first part of these lectures, to the author's formulation of his vitalism.

The important question is: Can the organism be a machine either in its functions or in its origin? The answer is as follows: It is certainly a system in which, as experiment shows, the rôle played by any part, *i. e.*, cell or group of cells (the "prospective value"), is a function, (1) of its position, l, thus implying coöperation with other parts, (2) of the absolute size, s, of the system, (3) of something else, E, which, with position and size the same, determines the specific development, a factor, therefore, "embraced in the prospective potency and implying order." This is formulated:

$$p \cdot v \cdot (X) = f\,(s \cdot l \cdot E).$$

Next, both the necessity for, and the nature of, the factor E are shown by the elimination of external and internal stimuli, of "means" of chemical agencies, of machine-structures as possible explanations for localization of structure, for typical form, for regeneration, etc. Of course this is the very question,— whether such organic phenomena can or cannot be thus explained, —with neither position to be refuted by assuming the other. Yet our author does not quite *assume* this position; he presents some arguments. Thus he considers that a *chemical* theory of form-building cannot account for regeneration; for that would imply the reëxistence of some compound to be disintegrated anew after disintegration had taken place already; but this reëxistence is impossible. But the question is begged when it is asserted that atoms and molecules can account only for crystallographic form, and that specificity of organic form does not go hand in hand with specificity of chemical composition and therefore cannot depend on it.

Only one more possibility remains to be eliminated, the view, namely, that the properties of the organism are due to a machine-like interaction, physical as well as chemical, among its parts; but in his refutation of this Driesch is guilty of the fallacy of *ignoratio elenchi.* He first throws dust in our eyes by defining machine, in a manner quite acceptable, as including both physical and chemical constituents and their interactions. From this standpoint, a mass of substances undergoing chemical reactions would be a machine, and that such a machine would have parts like the whole is implied by a number of the most fundamental laws of chemical reactions. But next, losing sight of this definition, he argues that a machine has a typical construction with regard to the three dimensions of space and, therefore, no part like the whole; consequently, that the organism, which experimental embryology has shown *to have parts like the whole,* cannot be a machine. Thus he ignores the possibility that, although not a machine in this narrow sense, the organism may, nevertheless, be a machine as he himself first defined the term. Yet he boldly commits the fallacy of failing to argue to this point, and concludes, because the organism is not a machine in the second sense, that it cannot be a machine in any sense, and that the factor *E* is a new and distinct element of nature. This he describes here and elsewhere as psychical in character, as acting on the physical and chemical constituents as means, and as having the end within itself.

This concludes what is regarded as the most important part of the proof of vitalism, or of the autonomy of life, as our author is willing to call it, although I am not sure that the two are identical, as he would have them. But concerning the position maintained by the author and the more usual mechanistic one opposed to it, it is of interest to note that they again illustrate the variability of conclusions which different men will get from the same data, conclusions, which, though seeming to be very different, are really so only in their terminology and not in their practical scientific outcomes. Thus there would be almost universal agreement among both physicists and chemists to-day that the various properties of the organism cannot be explained in the sense either of deriving them additively from the chemical and physical properties of the parts or by any other method of deduction, although, once found, their functional connection with the two sets of properties may be established empirically. Yet, in perfect agreement with this admission, the position may be taken that the organism is a specific complex of certain physical and chemical constituents; that, by their coöperation, etc., new and specific properties are determined in a non-additive manner; that, at the same time that the laws of the constituents still hold, new laws for the phenomena at each higher level are also valid; and, finally, that certain functional parts are like the whole. Such a position is only a special case of a principle which must be accepted, I believe, in every instance both of experimental synthesis from constituents and of ideal synthesis following on ideal analysis, a principle which makes recognition of universal epigenesis, of genetic modes, of critical points, of creative synthesis. Now such a position is indeed actually taken, if not by all, at least by the majority of those biologists who call themselves mechanists. But it is a position which admits both that there are parts like the whole and that the organism has certain properties which the parts do not have, — call this autonomy if one will, — but which does not find therein, since an analogous epigenesis is found in the inorganic realm, any reason for distinguishing the organic from the inorganic by such terms as 'vitalism' and 'entelechy.' It is the position, furthermore, which in its general scheme, finds metaphysical and epistemological grounds for the limitation of explanation, so far as this means deductive derivation, of all other properties from those of ultimate elements like masses or electrons. Accordingly, in the case of the specific problem under discussion, it is a view which cannot discover that any further explanation is made by using terms like 'vitalism' and 'entelechy' for the designation of 'autonomy' than by not using them. Such terms are seen to be, at best, but names for our difficulties, for an ultimate nonrational element in things, so that a theory thus employing them will differ from one not doing so only in terminology, and not in practical outcome. This, in fact, is the only difference, — an entirely arbitrary one, — that Driesch is justified in making on the basis of the facts which he shows constitute the autonomy of life. If, in order to designate this, he wishes to use the terms 'entelechy' and 'vitalism,' he certainly has the right. Any other use of them, however, as meaning, for example, the existence of a sort of psychical entity over and above the physico-chemical complex in the organism, will amount *either* to employing a symbol for something that does not exist, *or*, if something does exist, to transforming the problem, with all the same difficulties and details, from its original in the physico-chemical complex to its attenuated copy. Such a duplication of problems is, however, hardly good scientific method.

The remainder of the volume need not detain us long, for, although it is perhaps more valuable than the part just criticised above, it is, evidently, not so regarded by the author.

Quite a long "division" is devoted to Adaptation, and some interesting points are made. Only to regulation of functional disturbances is this name given, *i. e.*, adaptations are adaptations only by being *correctives* to the functional state. Certain morphological adaptations take place only in regard to functional changes which come from the very nature of functioning, *i. e.*, by functioning the tissues become better adapted for functioning. Adaptations are to be distinguished from adaptedness, which means that something is well fitted to perform a specific part in normal general functioning.

One of the most interesting adaptations is the immunity against abnormal chemical stimuli, *i. e.*, both inorganic and organic toxins. It is well known that the organism produces an antitoxin to combat in some way the toxin produced by bacteria, etc. But there is also an overproduction of the antitoxin that conditions both active and passive immunity. Our author thinks that this renders impossible any merely chemical theory of these facts, though why he does not say.

In the fourth and final "division," on "Inheritance," what is called a second proof of vitalism and entelechy is presented. It assumes, however, the validity of the so-called first proof. It is argued that, since genetic continuity extends from the mature individual back through the fertilized egg to the sexual cells of the preceding generation, and so on, *ad infinitum*, and since the development of the egg demands an entelechy, the process of the egg's formation, in fact, the whole line of inheritance processes, likewise demands such an agent. Further comment on this is not necessary.

In Part II there are discussed "The Principles of Systematics," "The Theory of Descent," and "The Logic of History." Biological classification is a mere catalogue; there is nothing *a priori* rational in it as there is in the science of space.

Descent means transformism and yet a prevalence of similarities over differences; the former are to be explained as due to inheritance, but even this does not give us much by way of uniformly accepted phylogeny. Darwinism and Lamarckism are discussed and criticised; each is to be distinguished from the original opinions of its originator, and each fails as a general theory. They must be completed, in the author's opinion, by the hypothesis of a morphogenetic power at the root of all transformism, a power which we do not understand, but which we see manifested, — a suggestive admission.

The "division" on "History" is rather interesting. Real history stands between mere enumeration and ontogeny. In it there is *cumulation.* But since history deals with the individual *qua* individual, with the single and not with the general, it cannot touch our philosophy, our view of the world, for this demands rules, laws, concepts. Any logical or moral development towards an end is therefore not to be found in human history. There is only a cumulative result which may be lost and have to be acquired again. Nor can history be saved, as Rickert attempts, by making it relate to values, for there is no standard of value, and, if there were, history would become unhistorical by becoming a mere collection of instances. Accordingly, the singularities of history must remain, and they can be only of practical and emotional interest and not of philosophical value.

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Kant's kritischer Idealismus als Grundlage von Erkenntnistheorie und Ethik. Von OSCAR EWALD. Berlin, Ernst Hofmann & Co., 1908. — pp. ix, 314.

As the title indicates, the author aims to present a constructive view in connection with the idealism of Kant. The book thus naturally falls into two parts, in the first of which the emphasis is placed upon criticism, while in the second the writer's personal views become more prominent. It should be stated, however, that the criticism never assumes an unfriendly tone, its aim throughout being to discover and hold fast to that which is good.

To consider the discussion of Kant in detail is a task of too great a magnitude for the reviewer, but it is fortunately not indispensable for the purpose of a general survey. In general, the contention of the writer is that Kant is right in his insistence upon *reine Erkenntnis* and *reine Anschauung*, but that this insight is constantly misinterpreted and misapplied. In the first place, Kant shows an unmistakable tend-